

22 January 2007

Technical Memorandum No. 3 - Administrative Final

To: Donette Dunaway, Central Coast Regional Water Quality Control Board and Carl Niizawa, P.E., DEE, City of Salinas

From: Chris Conway, CPSWQ, Brad Moore, P.E. and Colleen Jenkins

Subject: Model Low Impact Development (LID) Ordinance for Salinas and the Central Coast K/J 0695006

Executive Summary

The following provides Kennedy/Jenks final version of this technical memorandum. A draft version of this memo, dated 14 November 2006 (hereafter referred to as Draft TM-3) was provided to City of Salinas (City) and Central Coast Regional Water Quality Control Board (Regional Board) for review and comment. Only the Regional Board provided comments, which have been addressed in this memo. Suggested text has been added to the Model LID Ordinance to address the Regional Boards comments. However, a legal review of the Model LID Ordinance may be prudent to ensure it satisfies the intent of the NPDES Permit.

This research results indicate that communities that have created ordinances that encourage, not mandate Low Impact Development (LID) have had little voluntary implementation, whereas widespread implementation of LID has occurred where the ordinances require the implementation LID. Ordinances that require LID in new development and redevelopment projects typically include the following:

- Permitting and plan review procedures with an associated fee structure;
- Project specific storm water management plan submittal requirements;
- Required performance and design criteria presented in a referenced design manual;
- Agency construction inspection procedures;
- Enforceable maintenance agreements;
- Post-construction inspection procedures; and,
- Enforcement and penalty procedures.

An important component of storm water management enforcement procedures is the provision that allows the municipality to conduct necessary corrective actions and recover the costs.

A Model LID Ordinance is presented in Appendix A that includes all of the above elements. This ordinance uses the model post-construction storm water runoff control ordinance

Technical Memorandum No. 3 - Administrative Final

Donette Dunaway, Central Coast Water Board and Carl Niizawa, P.E., DEE, City of Salinas

22 January 2007

Page 2

developed by the U.S. Environmental Protection Agency (EPA) with modifications based on the requirements of Salinas NPDES permit (Regional Board Order No. R3-2004-0135) and related language from other communities' LID ordinances. The Model LID Ordinance is intended to provide a starting point for discussion. The City can choose to adopt the Model LID Ordinance or they can incorporate selected language into its existing ordinances. As noted in the Table of Contents for the Draft Salinas DSP (Final Tech Memo No. 2, dated 18 January 2007), the Model LID Ordinance presented in this memo will appear in the Appendices of the Draft Salinas DSP.

Introduction

The purpose of this technical memorandum is to fulfill Task 4 of Kennedy/Jenks Consultants' (Kennedy/Jenks) Scope of Work with the National Fish and Wildlife Foundation dated 15 February 2006. Task 4 involved the following:

1. Review of the codes, ordinances and design standards developed by a number of communities and agencies that have re-written general plans, zoning regulations, and drainage design manuals to facilitate the implementation of Low Impact Development (LID) principles and practices.
2. Interview of storm water program coordinators and agency staff from other communities to:
 - a. Research the effectiveness of the policies and procedures developed to promote post-construction storm water runoff volumes, rates, and pollutant levels that mirror pre-development values (e.g. LID).
 - b. Research the approach used to gain stakeholder support; adopt and implement new codes, ordinances and design standards; and ensure long-term operation and maintenance of LID practices and structural treatment control BMPs.
3. Development of a Model LID ordinance for the City of Salinas and the Regional Board that encourages and requires LID and meets the requirements of Regional Board Order No. R3-2004-0135.
4. Identify the key City documents that should cross reference and conform to the City of Salinas Development Standards Plan.

The contract for this project was established by the Central Coast Regional Water Quality Control Board (Regional Board). The purpose is to facilitate the implementation of storm water pollution source control and LID for the City of Salinas (City) as required per Regional Board Order No. R3-2004-0135. The final deliverable for this project will be a Development Standards Plan (DSP) for the City that provides design standards and examples of LID practices for urban storm drainage management. The Salinas DSP will potentially serve as a model for the entire Central Coast.

Technical Memorandum No. 3 - Administrative Final

Donette Dunaway, Central Coast Water Board and Carl Niizawa, P.E., DEE, City of Salinas

22 January 2007

Page 3

As discussed during the 23 October 2006 conference call with the City and the Regional Board, the design standards that were originally envisioned to be included with this technical memorandum will be presented in the Draft Salinas DSP. Kennedy/Jenks decided this approach would be more efficient and expedite the development of the Draft Salinas DSP. In addition, the recommended separation and setback standards presented in Technical Memorandum No. 2 provide the general design standards that should be established for all direct and indirect storm water infiltration practices in Salinas and the Central Coast. Once interagency agreement on general design standards for storm water infiltration practices is established, it will be combined with additional design information on the fact sheets presented in Sections 3.0 and 5.0 of the Draft Salinas DSP. It should be noted that the recommended separation and setback standards presented in Technical Memorandum No. 2 do NOT apply to closed storm water/LID treatment systems such as storm water planters and bioretention basins with impermeable liners or enclosed in concrete boxes. These LID practices can be placed immediately adjacent to structures and within 100 ft of water supply wells if they are designed to prevent infiltration into underlying soils and include underdrains or sub drains that connect to the conventional storm drain system.

The City has indicated that it is currently referencing the design standards presented in the current version of the Contra Costa Clean Water Program Stormwater C.3 Guidebook (<http://www.cccleanwater.org/construction/nd.php>) and the California BMP Handbook for New Development and Redevelopment (www.cabmphandbooks.com). The design standards in these documents will be similar to design standards presented in the Draft Salinas DSP.

Upon completion of this project, the finalized version of this memorandum, and all other final memoranda developed for this project, will be provided in a separately bound document to the Regional Board and the City. The draft and final versions of this and other memos developed by Kennedy/Jenks for this project and other relevant documents such as the NPDES permit will be archived on the project website (City of Salinas LID Standards) accessible via the client login on www.kennedyjenks.com. Donette Dunaway, Carl Niizawa, and Denise Estrada have been issued the usernames and passwords necessary to access the project website. They are encouraged to share their usernames and passwords so that others at the Regional Board and City can readily access these documents.

Model LID Ordinance Development

After reviewing the LID ordinances developed by a number of other communities in the U.S. and the model ordinance developed by the EPA, the approach chosen by Kennedy/Jenks was to start with the EPA model ordinance (presented in Appendix B) and make changes based on the requirements of Attachment 4 to Order No. R3 2004-0135. Additional related language was also incorporated from the LID ordinances developed by other communities. The Regional Board's comments on draft TM-3 were also addressed. The plain text in the Model LID Ordinance in Appendix A is the EPA source text. Modifications and additional text are shown in ***bold italicized red*** font in the following sections:

Technical Memorandum No. 3 - Administrative Final

Donette Dunaway, Central Coast Water Board and Carl Niizawa, P.E., DEE, City of Salinas

22 January 2007

Page 4

- 1.1 Findings of Fact - language added referencing LID and MEP (source: Regional Board letter to City of Salinas, dated 23 December 2005).
- 1.2 Purpose - language added specifically citing the NPDES permit as an objective (source: similar to Salem, MA ordinance).
- 1.3 Applicability - language added for Priority Project Categories that create or add 5,000 square feet or more of impervious surfaces (source: Salinas NPDES permit, Attachment 4, pgs. 7-8). Also referenced the numeric sizing criteria found in the current version of the City of Salinas Development Standards Plan.
- 1.4 Compatibility with Other Permit and Ordinance Requirements – language added to address other ordinances that may impose different restrictions or provide lower protective standards for human health or the environment (suggested language in response to Regional Board comment in draft TM-3).
- 1.6 Development of a Stormwater Design Manual - changed “Stormwater Design Manual” to “Development Standards Plan.”
- 2 Definitions - LID, MEP and significant redevelopment definitions added (source: Regional Board Letter dated 23 December 2005, and Stafford Co, VA ordinance). Also removed the EPA definition of water quality volume (WQ_v) and added definitions for Volume-based and Flow-Based Treatment Control BMPs (source: Salinas NPDES permit and Technical Memorandum No. 2).
- 3.3 Application Review Fees – added “and the amount of new impervious surfaces” to the fee to be developed by the City for the review of any land development application.
- 3.4 Application Procedure – added “20” business days and “15” business days (suggested starting point for discussion).
- 3.5 Permit Duration – added “All applicable plans including but not limited to storm water reports, LID design drawings, as-built drawings, maintenance agreements and other pertinent agreements, will be retained on file by the City for a minimum of 5 years.” (suggested language in response to Regional Board comment in draft TM-3).
- 5 General Performance Criteria for Storm Water Management - incorporated the Regional Board’s 8 water quality and watershed protection principles (source: Salinas NPDES permit, Attachment 4, pgs. 5-6). Also incorporated the required numeric sizing criteria (source: Salinas NPDES permit, Attachment 4, p. 9)
- 5(B) General Performance Criteria for Storm Water Management – revised first sentence to read as follows: “All storm water runoff generated from new development shall not discharge untreated storm water directly into a jurisdictional wetland or local water

Technical Memorandum No. 3 - Administrative Final

Donette Dunaway, Central Coast Water Board and Carl Niizawa, P.E., DEE, City of Salinas

22 January 2007

Page 5

body without meeting all applicable storm water treatment and permit requirements.” (suggested language in response to Regional Board comment in draft TM-3).

- 5(B) General Performance Criteria for Storm Water Management – revised this section to read as follows: “To prevent or reduce downstream erosion, and to protect stream habitat, the City of Salinas shall implement controls to limit post-development storm water run-off discharge rates, velocities and volumes to pre-development conditions. Disturbances of natural water bodies and natural drainage systems caused by development within the jurisdictional authority of the City of Salinas, including roads, highways, and bridges, shall be minimized and the current applicable BMPs developed by Caltrans will be implemented. These include, but are not limited to, construction BMPs to be implemented when working in streams and wetlands, and temporary and permanent streambank stabilization BMPs. Development in areas that are particularly susceptible to erosion and sediment loss shall be developed per the LID requirements of the current Development Standards Plan.” (suggested language in response to Regional Board comment in draft TM-3).
- 6 Basic Storm Water Management Design Criteria – added references to LID and changed “current Stormwater Design Manual” to “current Development Standards Plan.”
- 6.7 Maintenance Agreements – added the Regional Board’s Maintenance Agreement and Transfer requirements (source: Salinas NPDES permit, Attachment 4, p. 11).
- 7.3 Final Storm Water Management Plan Requirements - added “100” feet beyond the limits of the proposed development for the Topographic Base Map” (suggested starting point for discussion). Also added text regarding requirements to conduct infiltration testing at the location of proposed storm water infiltration structural treatment control BMPs (consistent with the recommendations presented in Technical Memorandum No. 2).
- 9.7 Failure to Maintain Storm Water Management Practices – added “30” days to affect maintenance and repair of the facility after proper notice by the City (suggested starting point for discussion).
- 10.4 Civil and Criminal Penalties – revised the text to indicate that the City may refer any person who violates the provisions of this Ordinance to the Regional Board who may impose fines of up to \$10,000 per day.

Appendix B presents the original full text of the EPA Model Post-Construction ordinance for comparison. Also presented in Appendix B are the LID ordinances developed by the City of Santa Monica, CA, Pierce County, WA, the Cities of Gig Harbor and Tumwater, WA, Stafford County, VA, Salem, MA.

Technical Memorandum No. 3 - Administrative Final

Donette Dunaway, Central Coast Water Board and Carl Niizawa, P.E., DEE, City of Salinas

22 January 2007

Page 6

LID Ordinance Research

Kennedy/Jenks conducted research to locate municipal ordinances that incorporated LID design principles, practices and policies into their storm water management requirements for new development and redevelopment. The ordinances examined were obtained through referral from within Kennedy/Jenks, web-based research, and the EPA website. Most ordinances were available online, and most communities provided background information on their websites about what led them to draft their ordinances. After reviewing the pertinent community websites and ordinances (when available), several City/County contacts from other communities were called to ask additional questions regarding the development and implementation of their ordinances (see Appendix C for a summary of phone conversations). The answers were used to make judgments about language included in the model ordinance template, and what possible changes should be contemplated or avoided.

Key questions were:

- 1) What works well and not so well?
- 2) Is LID an option, or mandatory?
- 3) How are maintenance and enforcement handled?
- 4) Were there any obstacles to overcome? If so, what were they?
- 5) Are there any other communities you are aware of implementing LID?
- 6) Is there a certain template or model you started with?
- 7) Any general comments you would like to provide?
- 8) Any one else you suggest we should talk with?

The questions provide a survey of the respective agency's experience in implementing local storm water ordinances, as opposed to establishing criteria or thresholds for an ordinance to meet. The following communities were contacted by phone and asked the above questions:

- Santa Monica, CA: Environmental Programs Division; Urban Runoff Mitigation Program
- Pierce County, WA: Planning and Land Services
- Tumwater, WA: Planning and Facilities Department
- Stafford County, VA: Environmental Programs, Department of Code Administration

Technical Memorandum No. 3 - Administrative Final

Donette Dunaway, Central Coast Water Board and Carl Niizawa, P.E., DEE, City of Salinas

22 January 2007

Page 7

Additional community ordinances that were available and reviewed included Knox County, TN and Salem, MA. However, agency contacts for these communities were not available by phone.

The following presents a summary of Kennedy/Jenks' phone survey. Additional details of the survey are included in Appendix C.

Santa Monica's Urban Runoff ordinance requires a ¾-inch rain event runoff reduction for developments that exceed certain thresholds, to be met through storage volume or treatment flow mitigation measures or BMPs, and an appropriate maintenance plan. Santa Monica's ordinance requires the completion of an Urban Runoff Mitigation Plan, which is a relatively simple and straightforward worksheet that was originally written to meet LA County's NPDES storm water permit requirements. Santa Monica's ordinance also requires good housekeeping practices at existing properties, and has an annual review of BMP maintenance procedures.

Pierce County, WA has LID requirements (adopted in April 2005) for certain zones deemed sensitive, such as waterways and wetland areas. The Pierce County Storm Water Management manual has LID requirements that are referred to in the code. In comparison, Gig Harbor, WA has a blanket LID requirement for all new development and redevelopment. LID practices are listed directly in the City's code. For example, Gig Harbor Municipal Code, Title 14.20.460 states "All major developments shall provide treatment of stormwater discharge utilizing wetponds and/or biofiltration BMPs."

Tumwater, WA has had an LID ordinance for "Zero Effect Discharge" since 2002, as an option that developers can use to meet their storm water management requirements. At this time, very few developers have used this option, but their planner feels it may be more effective when land becomes less easily available. This ordinance also lists project requirements rather than referring to a manual, such as retaining 65% of native growth, road orientation and width, and impervious surface reduction techniques.

Since 2004, Stafford County, VA requires that LID be used to the maximum extent practicable (MEP) on new development projects. The code has general storm water management criteria written into it, and refers to their storm water management design manual for design and BMPs to meet the requirements. Currently an estimated 60 – 70% of new developments in Stafford County are using LID.

The EPA website has a model post construction storm water ordinance to aid in writing an ordinance to meet NPDES requirements (<http://www.epa.gov/owow/nps/ordinance/mol6.htm>). It is intended as a base document to work from, and has suggestions throughout where local information should be considered. The EPA website also provides several examples of ordinances they consider noteworthy (<http://www.epa.gov/owow/nps/ordinance/postcons.htm>).

The communities noted above primarily developed LID ordinances that were appropriate for their environment and primary type of development. Tumwater, WA was the least particular and is experiencing rapid new urban development. LID is provided as an option for developers to

Technical Memorandum No. 3 - Administrative Final

Donette Dunaway, Central Coast Water Board and Carl Niizawa, P.E., DEE, City of Salinas

22 January 2007

Page 8

meet storm water requirements. However, it is not currently a requirement. Santa Monica, CA on the other hand, is almost completely built out and only redevelopment is occurring. Their ordinance is generally sufficient for their needs. Stafford County, VA is located in the environmentally sensitive Chesapeake Bay area, and felt that there was not enough voluntary implementation of LID to meet their goals. Pierce County, WA believed they can balance land use and environmental sensitivity through zoning, and did not need to impose equivalent requirements on all zones. The codes developed by Stafford County, VA, Knox County, TN, Salem MA, and Pierce County, WA all referenced a separate storm water management manual (using LID) to meet ordinance requirements. Whereas Santa Monica, CA, Gig Harbor and Tumwater, WA all wrote LID requirements directly into their ordinances. Both methods can work effectively and are acceptable. If the enabling ordinance references the most current version of the storm management water manual, it could be easier for local agency staff to make changes and editions without going through a formal Council action.

As noted previously, Appendix C presents additional information about the interviews conducted with representatives from the City of Santa Monica, CA, Pierce County, WA, the City of Tumwater, WA, and Stafford County, VA. This information includes the representatives contact information, the population and the per capita income of the community.

Consistency with the Salinas DSP and Other City Documents

The key City documents that should cross reference and conform to the City of Salinas Development Standards Plan include the following:

- The City of Salinas Storm Water Ordinance
- The City of Salinas Zoning Code
- The City of Salinas Grading Ordinance
- The City of Salinas Standard Specifications, Design Standards and Standard Plans
- The Salinas General Plan
- The City of Salinas Stormwater Management Plan

If this is not currently the case, these documents should include a reference to the requirements noted in the current version of the Development Standards Plan and the Salinas NPDES permit during the next ordinance or plan revision cycle. The City has noted that ordinances and the General Plan are problematic to change and that specific LID design standards should be embedded in a single design (the DSP). Therefore the reference in the documents noted above should be generic to "the current version" of the DSP and the NPDES permit. Since LID is most effective when incorporated into the preliminary planning process, the Zoning Code and Grading

Technical Memorandum No. 3 - Administrative Final

Donette Dunaway, Central Coast Water Board and Carl Niizawa, P.E., DEE, City of Salinas

22 January 2007

Page 9

Ordinance should indicate that project specific storm water management plan (conceptual and final) requirements noted in the attached Model LID Ordinance should be completed concurrently with other City approval processes, including but not limited to the following:

- Preliminary drainage study;
- Preliminary grading plan;
- Site and building design parameters; and
- Requirements for parking/access.

The flow chart presented on the following page provides an example of how San Diego County incorporates project specific storm water management plan requirements into its existing submittal requirements. A similar flow chart is envisioned for the Salinas DSP.

Enclosures:

Appendix A – Model LID Ordinance

Appendix B – Municipal Code Examples

Appendix C – Phone Interview Notes